Effect of γCdcPLI, a Phospholipase A_2 Inhibitor from *Crotalus durissus collilineatus* Snake Serum on *Leishmania (Leishmania) amazonensis*

Lopes, D.S.[1]; Gimenes, S.N.C.[1]; Teixeira, S.C [2]; Vieira, C. S.[2]; Guimarães, D.O.[1]; Espindola, F. S. [1]; Rodrigues, R.S. [1]; Yoneyama, K. A.G. [1]; Rodrigues, V.M [1]

[1]Instituto de Genética e Bioquímica, Universidade Federal de Uberlândia, MG, Brasil, [2]1Instituto de Ciências Biomédicas, Universidade Federal de Uberlândia, MG, Brasil.

INTRODUCTION: The neglected human diseases caused by *Leishmania* parasite are treated with drugs associated with high toxicity and cost, parasite resistance and limited efficacy. Therefore, the development of new strategies for treatment of the leishmaniasis is essential and snake venoms are natural compounds with potential to yield novel drugs. **OBJECTIVES:** The aim of this study was evaluate the effects of γCdcPLI, a phospholipase A_2 inhibitor from *Crotalus durissus collilineatus* snake serum, on viability and parasite-macrophage interaction of *Leishmania (Leishmania) amazonensis*. **MATERIAL AND METHODS:** Viability assay was performed on promastigotes and macrophages cultivated in absence (control) or presence of increasing doses of γCdcPLI (0.78–100 µg/mL) up to 72 h by MTT assay. For invasion assay into macrophages, promastigotes previously incubated for 1 h in presence (10 and 50µg/mL) or absence of γCdcPLI (control) were added onto monolayer macrophages and incubated at 37°C in a CO_2 incubator for 4h. After incubation, the cells were stained by Giemsa. The invasion assay was also performed with macrophages previously incubated for 1 h in the presence or absence of γCdcPLI. **RESULTS AND DISCUSSION:** γCdcPLI presented cytotoxic activity against promastigotes showing IC_{50} of about 50µg/mL. Interestingly, the phospholipase A_2 inhibitor reduced peritoneal macrophages viability by only 30% at 50 µg/mL concentration. γCdcPLI interfered with the invasion capacity of promastigotes (previously incubated with γCdcPLI) in peritoneal macrophages, causing statistically significant reductions of approximately 10–12% at all toxin concentrations tested. In addition, when the macrophages were previously incubated with γCdcPLI the invasion parasite capacity showed significant reductions of approximately 20–30% **CONCLUSIONS:** Our results demonstrate that the γCdcPLI is an important tool for the discovery of new targets on parasite, as well as an alternative compound to improve the effectiveness of leishmaniasis treatment.

Keywords: phospholipase A_2 inhibitor, *Leishmania (Leishmania) amazonensis*, γCdcPLI.

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